

## USE OF TAPERED DIELECTRIC SLAB WAVEGUIDES FOR INPUT AND OUTPUT COUPLING OF LIGHT INTO PHOTONIC CRYSTAL DEVICES

5

### Abstract of the Disclosure

A three dimensional adiabatic taper provides a funnel for light to be coupled into high index material. The taper is formed by shadow deposition or sputtering from polysilicon, which can be used to match the refractive index of waveguiding material to which the taper is optically coupled. When designed with the correct shape and adequate smoothness, such tapers form efficient waveguide couplers. Once the light has been coupled through the adiabatic coupler into an index guide on a wafer or chip, an integral design of the transition between the index guide and photonic crystal ensures low loss coupling with a minimum of diffraction and back reflection.